AWOLs in West Virginia
An Alcohol Policy Analysis

By
Diana Gaviria, MD

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Approved by:

Steve Mason
Director, Division on Alcoholism and Drug Abuse
WVDHHR

William Williamson, MPH

Introduction

Alcohol is one of the most widely used drugs in the United States. The harmful use of alcohol has been and continues to be the source of many costs for individuals and society and a significant public health issue. The history of the societal relationship with alcohol in this country is a long one. Alcohol has been subject of the social movement of temperance and policy attempts to control the use of alcohol and its societal costs culminated in the passage of Prohibition, the 18th amendment, in 1920. While Prohibition was repealed in 1933, and is considered by most to have been a resounding failure, less drastic policy measures continue to address the harmful societal effects of alcohol use. Current policy measures to curb the hazards of alcohol include measures to limit access ("dry" jurisdictions, legal drinking age laws), to penalize overconsumption and attendant behaviors (public drunkenness laws, driving under the influence), to limit marketing (advertising bans), to provide education, and taxation of alcohol products. An emerging issue in the alcohol policy arena is the sale and use of Alcohol Without Liquid machines (AWOLs). These devices, first introduced in Asia and Europe are now being marketed in the United States. Statutes prohibiting these devices have been passed in a number of states and some local jurisdictions and are being considered in many more. In this paper I will look at the debate surrounding these devices as a case study in the context of a long history of alcohol policy in the US. I will also consider whether policy to restrict or ban these devices would be justified in West Virginia.

Background

Effects of alcohol

The health and public health implications of alcohol use are widely recognized and have been attributed to three different effects of alcohol consumption.

> *" Three important mechanisms explain alcohol's ability to cause medical, psychological and societal harm:*
> *-(1) physical toxicity*
> *- (2) intoxication and*
> *- (3) dependence* (Alcohol: No Ordinary Commodity. A Summary of the Book)

Physical toxicity refers to the physiologic effects, both direct and indirect, on body systems. Virtually all systems may be acutely or chronically affected by alcohol toxicity; examples include liver toxicity manifested as hepatitis or cirrhosis, neurologic deficits such as fetal alcohol syndrome or encephalopathy, gastrointestinal bleeding, and increased risk of cancers including esophageal, gastric, breast and colorectal. (NIAAA) While some of the physical toxicity of alcohol may result from acute use of alcohol, particularly binge-drinking, the effects are more often the result of chronic, heavy use of alcohol.

Intoxication is the state of being intoxicated. The American Heritage Dictionary of the English Language defines intoxicate as, "to stupefy or excite, as by the action of a chemical substance such as alcohol"(p.945). While this is a behavioral definition, legal and medical literature often defines intoxication by a given blood alcohol concentration (BAC); a brief review of state drunk driving laws show .08% is the most common. Since tolerance of the effects of alcohol may vary among individuals, the behavioral consequences of a given BAC may vary. The authors of "Alcohol: no ordinary commodity. A summary of the book" note that intoxication is the most significant

mechanism for the public health impact of alcohol, stating that the, "link between intoxication and adverse consequences is clear and strong, especially for violence, traffic casualties and other injuries." Relevant to our discussion of AWOLs, these authors note that "drinking patterns that lead to rapidly elevated blood alcohol levels result in problems associated with acute intoxication, such as accidents, injuries and violence."

Alcohol Dependence, or alcoholism, is the third mechanism of harm associated with alcohol. The National Institute of Alcohol Abuse and Alcoholism of the National Institutes for Health, defines alcohol dependence as, "a disease that includes the following four symptoms:

> ***Craving***--A strong need, or urge, to drink.
> ***Loss of control***--Not being able to stop drinking once drinking has begun.
> ***Physical dependence***--Withdrawal symptoms, such as nausea, sweating, shakiness, and anxiety after stopping drinking.
> ***Tolerance***--The need to drink greater amounts of alcohol to get "high."

The development of alcohol dependence is felt to be multifactorial; genetic vulnerability and frequency and intensity of exposure to alcohol are demonstrated contributing factors. The social harms of alcohol dependency include disruption of relationships, employment etc.

At this point in the discussion of alcohol's effects, the "J curve" phenomenon should be noted. Numerous studies have observed that mortality is lowest for light to moderate drinkers, higher for abstainers, and highest among heavy drinkers. One explanation for this finding has been that light consumption may confer a cardioprotective effect. These

effects, however, are recently found to be much smaller than previously thought. Recent studies suggest that any protective effect is limited to men over 40 years of age and post-menopausal women (Edwards, securing a positive impact on health) and at relatively low levels of consumption, 5g/day or one drink every other day(commentaries, p.1355). It has also been suggested that the J curve is confounded by other factors. Abstainers may be more likely to be socially and economically marginalized and thus at higher cardiac risk (Edwards). A closer examination of patterns of drinking finds that among those subjects of the 1984 National Alcohol Survey who reported light to moderate consumption, those with heavy occasional drinking (binge-drinking) and abstainers with a past history of heavy drinking had considerably higher mortality.(average volume) The authors suggest that *patterns of drinking* rather than average volumes are most pertinent to mortality and that their analysis brings into question the true significance of a j-curve relationship of mortality to volume of alcohol consumed. (Rehm)

Impact of Alcohol

Detailing the various measures of the societal impact of alcohol could occupy many volumes. The data cited here serve simply to demonstrate the magnitude of the impact of alcohol on the global, national and state-wide scale. It is relevant to understand the individual and societal costs of alcohol because this forms the rationale for development of policy; as noted in "Commentaries on the Report" by Peter Anderson, "The purpose of alcohol policy is to reduce the harm done by alcohol; the greater the harm, the greater the need for policy." (commentaries p. 1354)

In The World Health Report 2002, Reducing Risks, Promoting Healthy Life, the World Health Organization comments on the global impact of alcohol:

"Global alcohol consumption has increased in recent decades with most or all of this increase occurring in developing countries,.. Worldwide, alcohol caused 1.8 million deaths, equal to 4% of the global disease burden; the proportion was greatest in the Americas and Europe. Alcohol was estimated to cause, worldwide, 20-30% of oesophageal cancer, liver disease, epilepsy, motor vehicle accidents, and homicide and other intentional injuries."

In another measure of global impact, it is estimated that alcohol causes 58 million years of healthy life to be lost annually. (commentaries)

In the United States, a number of studies have attempted to estimate the impact of alcohol use. One of these, "Actual causes of death in the United States, 2000" (JAMA) utilized data from the CDC (National Health Interview Survey, Behavioral Risk Factor Surveillance System, National Alcohol Survey), and the Australian National Drug and Safety Report to arrive at an estimate of 85,000 deaths attributable to alcohol in 2000 or 3.5% of the total. Since much of the impact of alcohol is not reflected in mortality figures, another illuminating study report is "The Economic Costs of Alcohol and Drug Abuse in the United States-1992" produced by the Lewin Group at the request of two branches of the National Institutes of Health, NIAAA and NIDA (the National Institute on Drug Abuse. Overall, this study determined the cost of alcohol abuse and alcoholism in the US in 1992 was $148 billion. Included in this estimate was $18.8 billion for health care expenditures, $31.3 billion attributed to premature death, $67.7 billion for impaired productivity (including individuals affected by Fetal Alcohol Syndrome), $24.7 billion for alcohol-related motor-vehicle accidents (including premature mortality and property destruction), $19.7 billion in cost of alcohol-associated crime, and $683 million for social

welfare services. The authors note that while approximately 45% of this cost is borne by the abuser and his/her household, the remainder of the cost falls on government, private insurance, and victims.

In West Virginia, little information is available about the direct and indirect costs of alcohol but consumption patterns are available in the West Virginia Behavioral Risk Factor Survey Report (2003). This report reveals that 3.1% of West Virginians report heavy drinking (more than two drinks per day for men and more than one drink per day for women during the past month). In West Virginia, as is true nationally(table 2), 18-24 year- olds had the highest rate of heavy drinking (7.8%). Prevalence of binge drinking, the consumption of five or more alcoholic drinks on one or more occasions during the past month, was 11.1%. Again, 18-24-year-olds were at highest risk for this behavior, with the prevalence in this age group 24.5%. Both heavy and binge drinking were significantly higher in men than in women. West Virginia rates of both heavy drinking and binge drinking were lower than national rates. According to MADD (mothers against drunk driving), 33% of traffic fatalities in West Virginia in 2004 were alcohol related and 25% involved drivers with a BAC concentration higher than .08%. Nationally, these percentages were 39% and 30% respectively. These statistics reveal that, while West Virginia may not lead the nation in alcohol related impact, significant numbers of residents are affected and policies to reduce the impact of alcohol's adverse consequences are warranted.

History of Alcohol Policy

The evolution of alcohol policy in this country has reflected the need for society to prevent and minimize the societal costs of alcohol use. The authors of "Alcohol, no ordinary commodity – a summary of the Book" note that "Alcohol beverages are, by any reckoning, an important, economically embedded commodity". This is clearly true, the alcohol industry produces $11.5 billion in annual sales (AMA). It might be noted that alcohol use is highly socially embedded as well. Alcoholic beverages were not utilized by the eastern tribes of Indians in the New World but were a staple for the European settlers who imported their patterns of alcohol production and consumption. By most estimates alcohol consumption in the present day is modest in comparison with the colonial period and early history of the US. The average consumption in 1790 was 5.8 gallons absolute alcohol per drinking age person, in 1985 this was 2.58 gallons of absolute alcohol (Spirits in America p.205). It should be noted though, that consumption is unevenly distributed with the heaviest 5% of drinkers consuming 42% of alcohol sold and 7 in 10 adults drink less than one drink per week (AMA policy brief).

In the colonial period, much of the control of alcohol consumption was social rather than legal. In Drinking in America; a history, the authors note,

> *The social standards of the day had an important restraining effect on intemperance. As we have seen, much, if not most, colonial drinking was family and community oriented. And family and community conduct fell under the governance of social norms inherited, like drinking behavior, from England and the rest of Europe. These norms defined a largely traditional society whose members shared a common loyalty to and an identity with the community and its standards of individual conduct.*(p.15)

Yet, even with a strict system of social norms, enforced by church and family, each colony had a body of legal controls including sales of alcohol, prices, and especially,

penalties for public drunkenness. It is the contention of these authors that as American society became more dispersed, more diverse, and more individualistic, the traditional social controls were weakened, and the societal costs of alcohol abuse became greater. They note too that alcohol abuse in a modern industrial society carries greater risks to society as a whole, as opposed to risk limited to the alcohol users and their immediate households.

The first nationally organized efforts at implementation of alcohol policy to control these increasing costs surfaced with the emergence of the temperance movement in the early 1800s. This movement remained relatively small throughout most of the nineteenth century, but gained momentum after the Civil War. At this time, the focus on alcohol issues was not a focus of the nascent public health movement which concentrated largely on issues of hygiene and infectious disease. The temperance movement, led by the Women's Christian Temperance Union and the Anti-Saloon League, gained strength from religious affiliation and, "a growing women's movement focusing on protection of the family" (Alcohol problems and solutions). The rise of prominence of medicine as a scientific field also supported the control of alcohol consumption as the medical effects of alcohol became more recognized.

The culmination of the efforts of the Temperance movement was the enactment of the 18th amendment in 1920. Prohibition was in effect until its repeal in 1933 and it has been widely viewed as a failed policy, resulting in increased criminal activity and social disruption. Some however have advocated a more nuanced view of Prohibition (Berridge, V. commentaries), noting that in the initial phase Prohibition had considerable

public support and effected substantial changes in drinking behaviors, only in its "2nd period" did Prohibition lose public support and that period was characterized by increased lawlessness and more destructive drinking behaviors. After the repeal of Prohibition, the focus of alcohol policy returned to encouragement of "moderate" drinking, reflecting the view that heavy or hazardous drinking and alcohol dependence lay at the root of most of the societal costs of alcohol use.

The modern era of alcohol policy as a public health issue has been shaped by three publications of the World Health Organization. The first of these, Alcohol Control Policies in Public Health Perspective (Bruun et al.) was published in 1975. This marked a significant step in the integration of scientific data and the analysis of alcohol policy. As noted by Tim Stockwell in Classic Texts revisited, "this book was the first to place the public health significance of alcohol on the international scientific and policy agenda. It did so at a time when there had been close to three decades of increased per capita alcohol consumption in most of the developed world…". The conclusions of the authors of the volume were a departure from the emphasis on the societal costs of heavy drinking and alcohol dependence. Instead the main thesis is that, "the average amount of alcohol consumption in a society directly affects the prevalence of problems experienced by that society."(Babor) This "drew attention to the full spectrum of drinkers in a society, not just alcoholics" and led to the recommendation that, "one of the most effective ways to prevent alcohol problems is through policies directed at reducing average alcohol consumption" . The policy measures advocated in Alcohol Control Policies were thus population-based such as taxation, restricting access, rather than individual focused efforts.

The second WHO-sponsored publication that has helped to shape thinking about alcohol policy in this country and internationally, is Alcohol Policy and the Public Good (Edwards, et al.), published in 1994. This collaborative effort built on Alcohol Control Policies and updated it with the body of research about effectiveness of alcohol policy done in the intervening twenty years. One of the authors, Thomas Babor, summarizes the two main conclusions:

- *The research establishes that public health measures of proven effectiveness are available to curb the widespread costs, health consequences, and social problems related to alcohol use.*
- *It is appropriate to employ two intrinsically complementary approaches: a) responses that influence per capital alcohol consumption and aggregate-level problems, and b) policies targeted at specific drinking contexts and behaviors.* (linking science, p.70

Alcohol Policy and the Public Good outlined an "alcohol problems perspective" that should guide the formation of alcohol policies. Another of the authors, Griffith Edwards, defines this perspective as, "a down-to-earth empirical approach" with three basic tenets,

- *"The target for public policy is the prevention or alleviation of alcohol-related problems*." Policy should be guided by measurable damage to society, rather than "abstract or value-laden" issues of concern.
- *"Alcohol problems are broadly defined and go much beyond the restrictive medical concept of 'alcoholism'"*. This then encompasses acute and chronic problems as well as damage to the drinker and to others.
- *"The test for the worth of public policy in this arena is whether it succeeds"*

(section 3: policy issues… Edwards)

Building on the problems perspective, Alcohol Policy and the Public Good makes specific policy recommendations based on the proven efficacy of alcohol control policies. Environmental measures including taxation, and control of physical access to alcohol (age and sales restrictions), were found to be most effective and are strongly

endorsed. Enforcement of drunk-driving measures is likewise encouraged. Support of community-based treatment is noted. Finally, the authors note that education and advertising restrictions have the least evidence of efficacy, but may have long-term benefit that has not yet been completely demonstrated. Overall, their recommendation is for a policy mix which considers the national and local contexts of alcohol use and they note that "political feasibility and public acceptance are of inevitable importance in selecting alcohol policies". This last comment is a nod to the necessity of recognizing political reality.

The third WHO publication to contribute to the current conception of alcohol policy is Alcohol: No Ordinary Commodity – Research and public policy (2003). This volume was again a collaborative effort, sharing several of the authors with the two previous works. The criteria for evaluating policies were evidence of effectiveness and research support, extent of testing, and cost (no ordinary commodity, a summary). The 10 "best practices" by these criteria were, " minimum legal purchase age, government monopoly of retail sales, restrictions on hours or days of sale, outlet density restrictions, alcohol taxation, sobriety checkpoints, lowered BAC limits, administrative license suspension, graduated licensing for novice drivers, and brief interventions for hazardous drinkers." Again the authors found little evidence that school-based education and public service announcements had significant effect on consumption and patterns of drinking, and noted that treatment and early intervention had only medium efficacy with little population impact. (summary)

To what degree has alcohol policy in the United States followed the guidance of the World Health Organization's alcohol problems perspective? Stricter enforcement of drunk-driving laws, lowered BAC levels for enforcement, raising the drinking age, and laws increasing accountability of servers, have all been cited as successful alcohol policies in this country. On the other hand, by the criteria of the recommendations made in Alcohol policy and the public good and Alcohol no ordinary commodity, there has been an inordinate emphasis on such individual behavioral education and social norms prevention programs at the expense of more proven environmental interventions. This has, in large part, been due to the influence of the alcohol industry that has partnered in these educational efforts and has actively opposed environmental policies. The alcohol industry is a significant political player, in the 2000 election year cycle the alcohol industry donated $11.7 million to the Democratic and Republican parties. While alcohol producers and distributors have actively partnered in individual focused prevention programs such as education, they have actively opposed environmental measures such as taxation and community action programs, and have supported efforts to preempt local ordinances designed to reduce alcohol consumption. (AMA) These efforts have been successful. The real cost of alcoholic beverages has decreased in comparison to the consumer price index, due to the decreased real effect of taxation. In addition, many of the "educational" messages adopted with the support of the alcohol industry in fact send mixed messages and normalize drinking behavior. As noted in the AMA policy brief, "Partner or Foe? The Alcohol Industry, Youth Alcohol Problems and Alcohol Policy Strategies",

The alcohol industry's marketing practices promote an environment and alcohol policies that support and normalize the very drinking patterns and practices that social norms programs purport to prevent.

In addition to the influence of the alcohol industry on alcohol control policies, another factor that has been cited in the lopsided emphasis on individual, rather than environmental policies, is the "biomedicalization" of alcohol issues. In her article, "Biomedicalization and Alcohol Studies: Implications for Policy", Lorraine Midanik draws parallels to the study of aging, and psychiatric illness, and argues that as alcoholism has been defined as a genetically-based medical illness, the social context has been given less attention. This trend is reflected in the research funding priorities of the National Institute of Alcohol Abuse and Alcoholism and the information then provided to policymakers. She notes, "As biomedicalization prevails as a dominant lens by which alcohol problems are framed, policymakers will tend to move toward individualistic solutions to social problems".

In answer, then to the question of whether US alcohol policies are in accord with the alcohol problems perspective, it must be concluded that our policy mix is too heavily weighted to policies that address individual behaviors and that this has come at the expense of the environmental policies demonstrated to be most effective.

The AWOL Debate

With this background we can consider the issue of AWOLs – Alcohol Without Liquid machines. These devices are essentially alcohol nebulizers, 80% alcohol is vaporized in oxygen produced by an oxygen generator. They were first introduced in Europe and

Asia, where reportedly they have become popular in bars. In 2004, they were introduced to the United States through the sole distributorship of Spirit Partner, Inc. Inquiries to Spirit Partner, Inc. regarding the number of units sold in the United States since introduction were not answered. The website, www.awolmachine.com, advertises units for commercial use as well as individual units that may be ordered. The website makes a number of claims about the devices.

- *This method of consuming alcohol reduces the effects of a hangover and is low carbohydrate.*
- *It promotes a sense of well being and a mild euphoria. It is a fun new legal way to take alcohol.*
- *When used responsibly, there is no evidence to indicate greater risks from using AWOL than consuming alcohol in the traditional way. AWOL should be used no more than two 20-minute sessions within a 24-hour period.*

In answer to concerns about the effect of AWOLs on breath analysis for BAC the website claims, without citing data, that the device has no effect on breath analysis. Regarding health concerns the website also quotes Judith Hind of England's Department of Health Alcohol Policy Team, "We are not aware of any current evidence to suggest that use of the AWOL machine, in accordance with your advice and instructions, poses particular risks to the user over and above the risks that may be posed by consuming an equivalent amount of alcohol in an equivalent time period in a more traditional way".

Despite these claims and reassurances, an array of individuals and organizations have raised concerns about the safety of AWOLs and taken a stance against them. The following represent some of these concerns:

- "Our lungs aren't made to be exposed to high concentrations of alcohol. Our stomachs can tolerate it but our lungs may have lots of problems in terms of

drying, coughing, concerns about humdification…" Mr. Michael Silver, Rush Medical Center (Fox)

- "The alcohol vapour bypasses the stomach and liver, and is absorbed through blood vessels in the nose or lungs. This creates a 'hit' up to 10 times more potent than by drinking the same amount of alcohol. The user could have a blood alcohol concentration well below the legal limit, despite being far too drunk to drive. Medical experts believe that inhaling alcohol could cause serious brain damage." Emile-J. Therien, President , Canada Safety Council.
- "Consumed responsibly and in moderation, beverage alcohol can be a normal, healthy, adult lifestyle choice. There is absolutely nothing responsible about these devices and they should be banned immediately." Dr. Peter Cressy, President of the Distilled Spirits Council. (yahoo news)
- "These machines clearly pervert the meaning of 'social drinking' by making inebriation the purpose of alcohol consumption. What other reason to deliver alcohol as directly to the brain as possible, bypassing the normal absorption process?" George Hacker, Director of the Alcohol Policies Project at the Center for Science in the Public Interest. (cooper press release)
- "AWOL machines should be banned in Colorado and the rest of the country because of concerns that they could encourage alcohol abuse and drunk driving." Guy Smith, Diageo North America's Executive Vice President. (Diageo is "the world's leading premium drinks business")

In response to these concerns, a number of states and some municipalities have passed or proposed legislation to prohibit or restrict use and sale of AWOLs. These include Suffolk County(New York), Massachusetts, Wyoming, Maine, Colorado, Idaho, Kansas, Michigan, Pennsylvania and Maryland. Vocal opposition to these devices has come from alcohol industry representatives such as Diageo and DISCUS (Distilled Spirits Council of the United States), and public advocacy groups such as the Center for Science in the Public Interest.

Given this record of opposition and legislation regarding these devices it might be assumed that there is scientific evidence of physiologic or public health harm posed by AWOLs, however, none can be cited. None was found in an exhaustive websearch. Inquiries were made to the Marin Institute (described on www.marininstitute.org as "an alcohol industry watchdog and a resource for solutions to community alcohol problems")

and MADD (Mothers against drunk driving). Neither was aware of research in this area. In fact, MADD noted that they have not taken a stance on the devices because of a lack of research evidence. In a response from NIAAA (National Institute of Alcohol Abuse and Alcoholism, they noted, "At this time we don't have any information on this subject but we're in the process of doing some research." Inquiries to the Food and Drug Administration, England's Department of Health Alcohol Policy Team, the Bureau of Alcohol, Tobacco, and Firearms, and the Century Council were unanswered.

Is there sufficient basis then for policy regarding AWOLs, based on dangers that are more speculative than grounded in evidence? The concerns voiced are real and credible, although the opposition of alcohol industry representatives might be considered to serve their own economic interests. If these devices lead to direct damage to the respiratory tissues, or higher toxicity due to more rapid absorption, or are associated with a higher rate of intoxication, or might subvert the current legal means of evaluating alcohol consumption (breath analyzers) wouldn't these be valid reasons to regulate and possibly prohibit them? In the WHO alcohol problems perspective such legislation would be warranted as a means to limit access to a particularly hazardous form of alcohol delivery. If these devices pose a potential hazard, should they be allowed to gain a foothold while research on their effects is performed? In his commentary on Alcohol: no ordinary commodity, Gabriel Romanus member of the Swedish parliament and past manager of the Swedish Alcohol Retailing Monopoly, makes a comment to this very issue:

> *... every politician knows that in many situations political decisions have to be made, even if there is no scientific evidence on which to base them. If our forefathers had not been able to make decisions without conclusive evidence, we would have had no alcohol taxes, no age limits and no government retailing monopolies.*

So, while the alcohol problems perspective urges policymakers to base policy on evidence and best practices, there may be a case made in some instances for "preemptive" legislation, legislation that anticipates harmful consequences.

The answer may be one suggested in legislation proposed at the federal level. In H.R. 613, Rep. Bob Beauprez of Colorado has proposed that Alcohol Without Liquid devices should be subject to approval by the Commissioner of the Food and Drug Administration. This Bill was introduced on February 8, 2005 and referred to the Subcommittee on Commerce, Trade and Consumer Protection on February 25, 2005.(library of congress) By subjecting these devices to evaluation by the Food and Drug Administration, questions about the public health and physiologic effects of these devices could be clearly addressed. A bill at the state level, prohibiting AWOL devices pending federal approval may be the most prudent course in light of the many unanswered concerns surrounding these controversial machines.